Application No. 10/701526

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YR CLMPTO

Claims 1-25. (Canceled).

26. (Currently Amended) A process of forming a semiconductor structure, comprising:

forming a plurality of high and low density areas of nFETS and pFETs on a substrate, the high density areas exhibiting a gate to gate distance of 130 nanometers or less and the low density areas exhibiting a gate to gate distance of greater than 130 nanometers or-greater;

forming a thin compressive film of at least one of Si<sub>x</sub>N<sub>y</sub> and Si<sub>x</sub>ON<sub>y</sub> in a range of 20 to 50 nanometers in channel regions of the high density areas of pFETs exhibiting a compressive stress of approximately -1400 MPa;

forming a thin tensile film of at least one of Si<sub>x</sub>N<sub>y</sub> and Si<sub>x</sub>ON<sub>y</sub> in a range of 20 to 50 nanometers in channel regions of the high density areas of nFETs;

1

forming a thick compressive film of at least one of Si<sub>x</sub>N<sub>y</sub> and Si<sub>x</sub>ON<sub>y</sub> in a range of 50 to 500 nanometers in channel regions of the low density areas of pFETs;

forming a thick tensile film of at least one of Si<sub>x</sub>N<sub>y</sub>, and Si<sub>x</sub>ON<sub>y</sub> in a range of 50 to 500 nanometers in channel regions of the low density areas of nFETs exhibiting a tensile stress of approximately 700 Mpa.

wherein the forming of the thick tensile film includes providing:

a temperature of approximately 480°C, a pressure of approximately 6.25 Torr, a spacing between the substrate and electrode of 490 mils, and a flow of 300 sccm of 2% dilute SiH<sub>4</sub> gas, 15 sccm NH<sub>3</sub> gas and 1060 sccm

N<sub>2</sub> gas using RF power of 340 watts, and

wherein the forming of the thin compressive film includes providing:

a temperature of approximately 480°C, a pressure of approximately 5.75 Torr, a spacing between the wafer and the electrode of 395 mils, and a flow of 3000 sccm of 2% dilute SiH<sub>4</sub> gas, 15 sccm NH<sub>3</sub> gas and 1060 sccm N<sub>2</sub> gas using RF power of 900 watts.

- 27. (New) The process of claim 26, wherein the 20 to 50 nanometer thickness of the thin compressive film does not pose a substantial risk of void formation.
- 28. (New) The process of claim 26, wherein the 20 to 50 nanometer thickness of the thin tensile film does not pose a substantial risk of void formation.
- 29. (New) The process of claim 26, wherein a compressive stress of the thin compressive film enhances performance of the high density areas without materially

degrading performance of the low density areas and a tensile stress of the thin tensile film enhances performance of the high density areas without materially degrading performance of the low density areas.

- 30. (New) The process of claim 26, wherein the thin compressive film and the thin tensile film are formed by one of a CVD process, a plasma enhanced CVD process and a PVD process.
- 31. (New) The process of claim 26, wherein the thick compressive film and the thick tensile film are formed by one of a CVD process, a plasma enhanced CVD process and a PVD process.
- 32. (New) The process of claim 26, wherein each of the thin and thick tensile and compressive films are formed by deposition on an SiO<sub>2</sub> liner.
- 33. (New) The process of claim 26, wherein the process produces a tensile stress that enhances electron mobility in the nFETS without materially degrading performance of the pFETS and a compressive stress that enhances hole mobility in the pFETS without materially degrading performance of the nFETS.

## CLAIM 34 (CANCELLED)

- 35. (New) The process of claim 26, wherein each of the thin and thick compressive films are formed before each of the thin and thick tensile films.
- 36. (New) The process of claim 26, wherein each of the thin and thick tensile films are formed before each of the thin and thick compressive films.
- 37. (New) The process of claim 26, wherein each of the thin compressive and tensile films are formed before each of the thick compressive and tensile films.
- 38. (New) The process of claim 26, wherein each of the thick compressive and tensile films are formed before each of the thin compressive and tensile films.